FCC Test Report

FCC EVALUATION REPORT FOR Certification	
Project Reference No.	308467
Product	Wireless Mouse Dongle
Brand Name	N/A
Model	WMD
Alternate Model	N/A
Tested according to	FCC Rules and Regulations Part 15 Subpart B Class B, ANSI C63.4-2014

Tested in period	2016-05-04	
Issued date	2016-05-06	
Name and address of the Test House	Nemko Shanghai Ltd. Shenzhen Branch Unit CD, Floor 10, Tower 2, Kefa Road 8#, Hi-Technology Park, Nanshan District, Shenzhen, China Phone : +86 755 8221 0420 Fax : +86 755 8221 3363	
Tested by	Juno Wong	2016-05-10
	Juno Wong	***date***
Verified by	Zone Peng	2016-05-10
	Zone Peng	***date***

Contents of This Report

1. Client Information

1.1 Applicant

Company Name:	Heng Yu Electronic Manufacturing Co., Ltd.
Company Address:	Room 1503-5, 15/F, Nan Fung Commercial Center, 19 Lam Lok Street, Kowloon Bay, Hong Kong.

1.2 Manufacturer

Company Name:	Zhuhai Heng Yu New Technology Company Limited
Company Address:	Jin Hai Avenue, Sanzao, Jinwan District, Zhuhai, Guangdong, China.

1.3 Scope

●Measurement and determination of electromagnetic emissions (EME) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission under FCC part 15.

2. Equipment under Test (EUT)

2.1 Identification of EUT

Category:	JBP
Name:	Wireless Mouse Dongle
Model Name:	WMD
Alternate model:	N/A
Brand name:	N/A

2.2 Setup drawing

2.3 Additional Information Related to Testing

TM 1 **120V AC 60Hz** **Working mode**

Remark : EUT connect to PC and communicated with PC with normal working mode
By pre-scan, only list the worst mode result in report
The following tests are performed at AE(PC) AC input port:
Conducted emission

A.E. used during testing:

Manufacturer	Description	Model	Serial Number	FCC ID/DoC
Apple	PC	A1278	C1MN99ERDTY3	DoC
DELTA	ADAPTER	ADP-60ADT	N/A	VoC
DELL	KEYBOARD	SK-8115	N/A	DoC
DELL	MOUSE	MOC5UO	N/A	DoC

3. General Test Conditions

3.1 Location

Global United Technology Services Co., Ltd. -- Nemko ELA 632

2nd Floor, Block No.2, Laodong Industrial Zone, Xixiang Road Baoan District, Shenzhen, China

FCC Registration No.:600491

Note: all test are witnessed by NEMKO engineer

3.2 Operating Environment

All tests and measurements were performed in a shielded enclosure or a controlled environment suitable for the tests conducted. The climatic conditions in the test area are automatically controlled and recorded continuously.

Parameters	Recording during test	Accepted deviation
Ambient temperature	20-25°C	15 – 35 ºC
Relative humidity	45-55%	30 - 60%
Atmospheric pressure	101.2 kPa -101.3kPa	86-106kPa

3.3 Operating During Test

- The EUT is operated at 120V~ 60Hz during all tests.
- EUT connect to PC via USB port and working at normal operation mode.

3.4 Test Equipment

The test equipments used in testing are calibrated on a regular basis. For most of the testing equipments accredited calibration is conducted once a year. For certain equipment the calibration interval is longer. Between the calibrations all test equipment are controlled and verified on a regular basis. The test equipments used are defined in each test section of this report.

4. Measurement Uncertainty

The Measurement Uncertainties stated were calculated in accordance with the requirements of NIST Technical Note 1297 with the confidence level of 95 %.

Conducted Emission : 0.15~30MHz 3.45dB

Radiated Emission: 30MHz~1000MHz 4.50dB

1GHz-18GHz 4.70dB

5. Radiated Electromagnetic Disturbances Test

5.1 Test Procedure

The EUT was placed on a non-metallic table, 80 cm above the ground plane inside a semi-anechoic chamber. An antenna was located 3m from the EUT on an adjustable mast.

The EUT were rotated 0 to 360 degree and the antenna height was varied between 1m and 4m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. The test result are reported as below.

For below 1GHz:

RBW=120 kHz; VBW=300KHz QP detector, The frequency range from 30MHz to 1000MHz is checked.

The frequency range from 1GHz to 25GHz(10th harmonics) is checked.

RBW=1MHz ; VBW=3MHz,PK detector for peak emissions measurement above 1GHz

RBW=1MHz ; VBW=3MHz, RMS detector for average emissions measurement above 1GHz.

5.2 Measurement Equipment

	Equipment	Calibration due	Type	Serial No.	Manufacturer
☒	EMI Test Receiver	Jul. 04 2016	ESU26	GTS203	R&S
☒	BiConiLog Antenna	Feb. 26 2017	VULB9163	GTS214	SCHWARZBECK
☒	Horn Antenna	Feb. 26 2017	BBHA9120D	GTS215	SCHWARZBECK
☒	Horn Antenna	Feb. 26 2017	BBHA9170	GTS216	SCHWARZBECK
☒	Coaxial Cable	Apr. 01 2017	N/A	GTS213	GTS
☒	Coaxial Cable	Apr. 01 2017	N/A	GTS211	GTS
☒	Coaxial cable	Apr. 01 2017	N/A	GTS210	GTS
☒	Coaxial Cable	Apr. 01 2017	N/A	GTS212	GTS
☒	Amplifier	Jul. 04 2016	8347A	GTS204	HP

5.3 Test Result

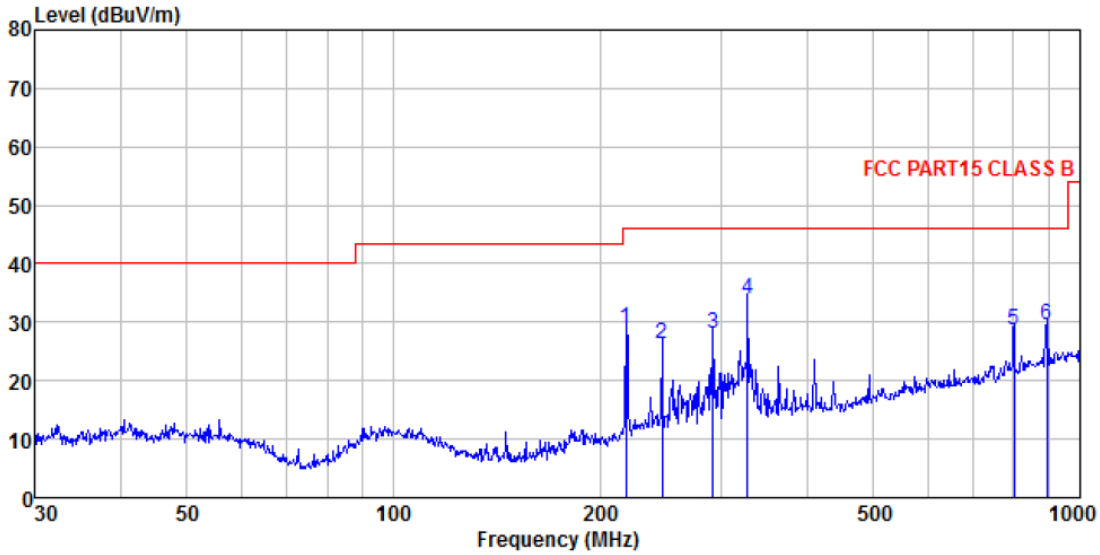
Worse result are reported:

Connect mode	Antenna Polarity	Remark	Test Data	Test Result
PC link mode	Horizontal	30-1000MHz	Diagram 5-1	Pass
	Vertical	30-1000MHz	Diagram 5-2	Pass
PC link mode	Horizontal	1GHz-6GHz	Diagram 5-3	Pass
	Vertical	1GHz-6GHz	Diagram 5-4	Pass

NOTES:

1. All modes of operation were investigated and the worst -case emission are reported.
2. H =Horizontal V=Vertical
3. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor
4. Measurements using CISPR quasi-peak mode.
5. The limit for Class B device is on the FCC Part section 15.109 .
6. Frequency = MHz Level = dBuV/m Limit = dBuV/m

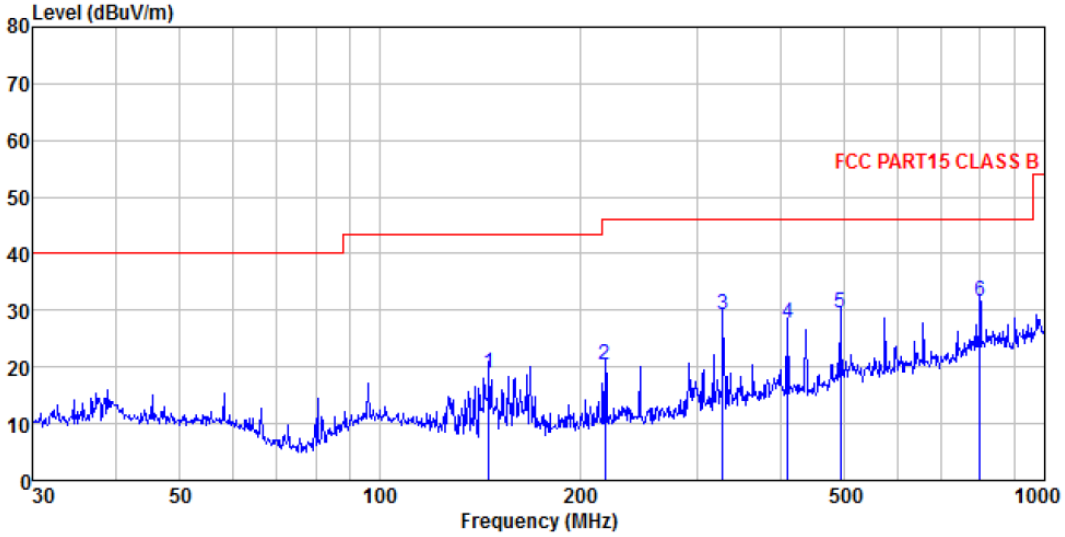
5.3.1 Diagram 5-1



Condition : FCC PART15 CLASS B VULB9163-2013M HORIZONTAL
EUT : Dongle
Test Mode : PC LINK Mode
Test Engineer: Chen

	Freq	ReadLevel	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	218.309	43.10	13.13	1.95	29.38	28.80	46.00	-17.20	QP
2	245.951	39.84	14.08	2.10	29.61	26.41	46.00	-19.59	QP
3	292.058	40.90	14.89	2.32	29.95	28.16	46.00	-17.84	QP
4	327.887	45.47	15.66	2.51	29.84	33.80	46.00	-12.20	QP
5	801.786	31.27	22.06	4.46	29.20	28.59	46.00	-17.41	QP
6	893.857	30.79	23.05	4.83	29.10	29.57	46.00	-16.43	QP

5.3.2 Diagram 5-2

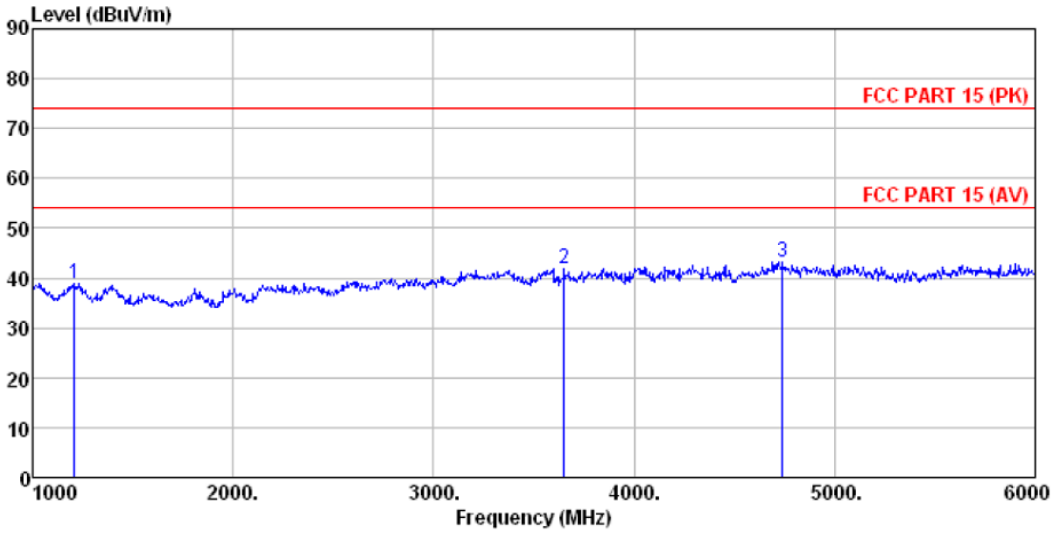


Condition : FCC PART15 CLASS B VULB9163-2013M VERTICAL
EUT : Dongle
Test Mode : PC LINK Mode
Test Engineer: Chen

	Freq	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	145.861	36.65	10.23	1.54	29.43	18.99	43.50	-24.51	QP
2	218.309	34.59	13.13	1.95	29.38	20.29	46.00	-25.71	QP
3	327.887	40.83	15.66	2.51	29.84	29.16	46.00	-16.84	QP
4	410.383	36.99	17.26	2.91	29.48	27.68	46.00	-18.32	QP
5	492.469	37.17	18.39	3.27	29.32	29.51	46.00	-16.49	QP
6	798.980	34.32	22.06	4.45	29.20	31.63	46.00	-14.37	QP

5.3.3 Diagram 5-3

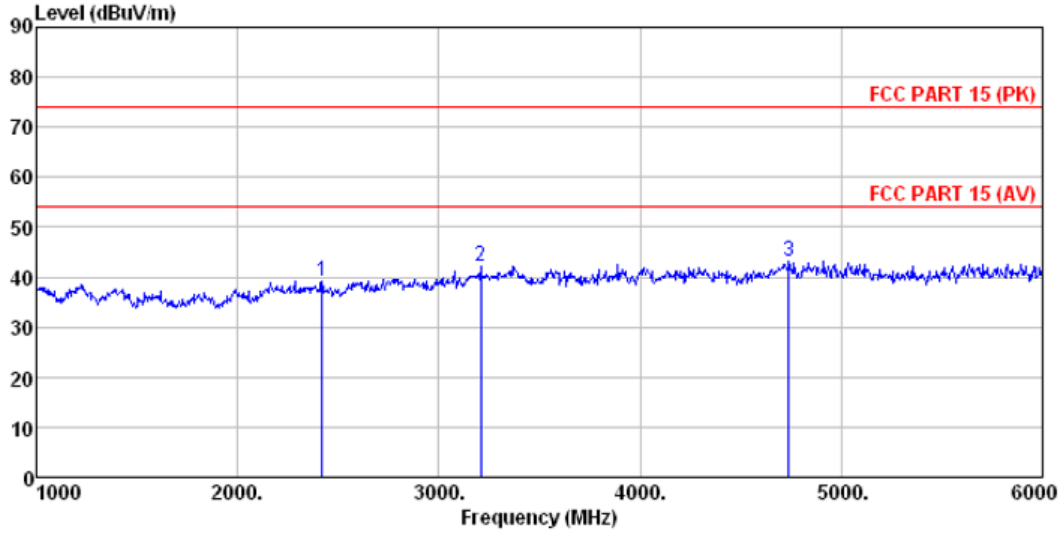
H:



Remark: Peak result is less than AV limit, so, AV result is comply with AV limit, and then only show the diagram in the report if the result is too low to the limit (more than 20dB).

5.3.4 Diagram 5-4

V:



Remark: Peak result is less than AV limit, so, AV result is comply with AV limit, and then only show the diagram in the report if the result is too low to the limit (more than 20dB).

6 POWER LINE CONDUCTED EMISSION TEST

6.1 Test Procedure

The EUT was placed on a non-metallic table, 80cm above the ground plane. The EUT Power connected to the power mains through a line impedance stabilization network. This provided a 50-ohm coupling impedance for the EUT (Please refer to the test setup photographs). The other peripheral devices power cord connected to the power mains through another line impedance stabilization network.

Both sides of power line were checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.4-2014 on conducted Emission test.

The bandwidth of test receiver is set at 9kHz. The frequency range from 150kHz to 30MHz is checked. The test result are reported as below.

6.2 Measurement Equipment

	Equipment	Calibration due	Type	Serial No.	Manufacturer
☒	Shielding Room	Jul. 04 2016	7.0(L)x3.0(W)x3.0(H)	GTS252	ZhongYu Electron
☒	EMI Test Receiver	Jul. 04 2016	ESCS30	1102.4500K30	Rohde & Schwarz
☒	10dB Pulse Limita	Jul. 04 2016	N/A	GTS224	Rohde & Schwarz
☒	LISN	Jul. 04 2016	NSLK 8127	8127549	SCHWARZBECK MESS-ELEKTRONIK
☒	Coaxial Cable	Apr. 01 2017	N/A	N/A	GTS

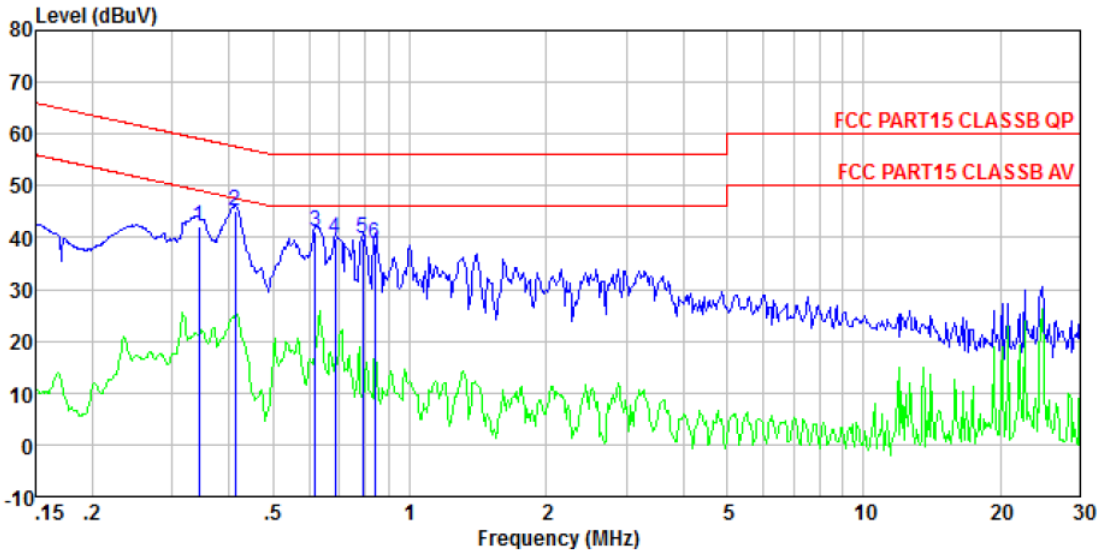
6.3 Test Result

Test mode	Power Line	Test Data	Test Result
PC link mode	Line	Diagram 6-1	Pass
	Neutral	Diagram 6-2	Pass

NOTES:

1. Measurements using CISPR quasi-peak mode & average mode.
2. All modes of operation were investigated and the worst -case emission are reported.
3. Result Level = Read Level +LISN Factor + Pluse Limiter Factor + Cable loss
4. LINE: L =Line, N = Neutral
5. The limit for Class B device is on the FCC Part section 15.107.
6. If QP Result comply with AV limit, AV Result is deemed to comply with AV limit

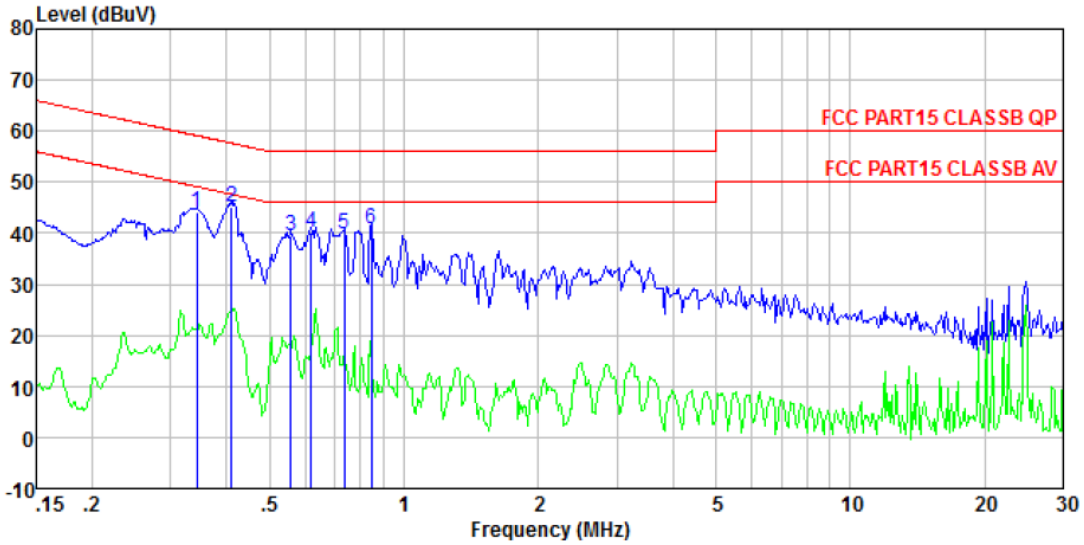
6.3.1 Diagram 6-1



Site : Shielded room
Condition : FCC PART15 CLASSB QP LISN-2013 LINE
EUT : Dongle
Test mode : PC LINK Mode
Test Engineer: Sky

	Freq	Read Level	Level	Cable Loss	LISN Factor	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.343	41.83	42.04	0.10	0.11	59.13	-17.09	QP
2	0.413	44.99	45.22	0.11	0.12	57.59	-12.37	QP
3	0.621	40.87	41.12	0.12	0.13	56.00	-14.88	QP
4	0.686	39.60	39.87	0.13	0.14	56.00	-16.13	QP
5	0.788	39.69	39.96	0.13	0.14	56.00	-16.04	QP
6	0.839	38.41	38.68	0.13	0.14	56.00	-17.32	QP

6.3.2 Diagram 6-2



Site : Shielded room
Condition : FCC PART15 CLASSB QP LISN-2013 NEUTRAL
EUT : Dongle
Test mode : PC LINK Mode
Test Engineer: Sky

	Freq	Read Level	Level	Cable Loss	LISN Factor	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.343	43.82	43.98	0.10	0.06	59.13	-15.15	QP
2	0.410	45.09	45.26	0.11	0.06	57.64	-12.38	QP
3	0.558	39.22	39.41	0.12	0.07	56.00	-16.59	QP
4	0.621	40.05	40.24	0.12	0.07	56.00	-15.76	QP
5	0.735	39.69	39.89	0.13	0.07	56.00	-16.11	QP
6	0.844	40.66	40.86	0.13	0.07	56.00	-15.14	QP

Appendix A Sample Label

Labelling Requirements

The sample label shown shall be permanently affixed at a conspicuous location on the device and be readily visible to the user at the time of purchase.

*** The following paragraph specified in the user manual.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

*****END OF REPORT*****